

CLAIMS

1. An apparatus, comprising:
a message generator for:
generating a first message comprising an acknowledgment indicator and
a rate control indicator; and
generating a second message conditioned on the rate control indicator.
2. The apparatus of claim 1, wherein the second message comprises a rate control command.
3. The apparatus of claim 2, wherein the rate control command is one of a plurality of values, wherein one or more of the plurality of values indicates a rate increase.
4. The apparatus of claim 2, wherein the rate control command is one of a plurality of values, wherein one or more of the plurality of values indicates a rate decrease.
5. The apparatus of claim 2, wherein the rate control command is one of a plurality of values, wherein one or more of the plurality of values indicates a rate hold.
6. An apparatus, comprising:
a receiver for receiving a packet;
a decoder for decoding the received packet; and
a message generator for:
generating a first signal comprising one of a first plurality of values, each value associated with an acknowledgment (ACK) or negative acknowledgment (NAK), and one or more of the values indicating a rate control command; and
conditionally generating a second signal comprising one of a second plurality of values corresponding to a respective plurality of rate control commands when the value of the first signal indicates a rate control command.
7. The apparatus of claim 6, further comprising a transmitter for transmitting the first signal conditionally transmitting the second signal.

8. The apparatus of claim 6, wherein the receiver is further operable to receive one or more transmission requests and one or more autonomous transmissions, the apparatus further comprising a scheduler for allocating a shared resource in response to the one or more transmission requests and the one or more autonomous transmissions.

9. The apparatus of claim 8, wherein the message generator further generates a grant message in response to a transmission request in accordance with the allocation.

10. An apparatus, comprising:

a receiver for receiving a first signal and conditionally receiving a second signal in accordance with a rate control indicator; and

a message decoder for decoding the rate control indicator from the received first signal.

11. The apparatus of claim 10, wherein the first signal comprises an acknowledgement.

12. The apparatus of claim 10, wherein the second signal comprises a rate control command.

13. The apparatus of claim 12, wherein the rate control command is one of a plurality of values, wherein one or more of the plurality of values indicates a rate increase.

14. The apparatus of claim 12, wherein the rate control command is one of a plurality of values, wherein one or more of the plurality of values indicates a rate decrease.

15. The apparatus of claim 12, wherein the rate control command is one of a plurality of values, wherein one or more of the plurality of values indicates a rate hold.

16. The apparatus of claim 10, further comprising a transmitter for transmitting a packet.
17. The apparatus of claim 16, wherein the transmitter retransmits the packet when the first signal indicates the transmitted packet is not acknowledged.
18. The apparatus of claim 16, wherein the second signal comprises a rate control command, and the transmitter transmits a second packet at a rate determined in accordance with a rate control command.
19. A base station, comprising:
 - a message generator for:
 - generating a first message comprising an acknowledgment indicator and a rate control indicator; and
 - generating a second message conditioned on the rate control indicator.
20. A remote station, comprising:
 - a receiver for receiving a first signal and conditionally receiving a second signal in accordance with a rate control indicator; and
 - a message decoder for decoding the rate control indicator from the received first signal.
21. A wireless communication system, including a base station, comprising:
 - a message generator for:
 - generating a first message comprising an acknowledgment indicator and a rate control indicator; and
 - generating a second message conditioned on the rate control indicator.
22. A wireless communication system, including a remote station, comprising:
 - a receiver for receiving a first signal and conditionally receiving a second signal in accordance with a rate control indicator; and
 - a message decoder for decoding the rate control indicator from the received first signal.

23. A method for rate control, comprising:

generating a first signal comprising one of a first plurality of values, each value associated with an acknowledgment (ACK) or negative acknowledgment (NAK), and one or more of the values indicating a rate control command; and

conditionally generating a second signal comprising one of a second plurality of values corresponding to a respective plurality of rate control commands when the value of the first signal indicates a rate control command.

24. A method for rate control, comprising:

receiving a packet;

decoding the packet;

generating a first signal indicating whether the received packet was decoded correctly and indicating whether a rate control command will be issued; and

generating a second signal comprising the rate control command when a rate control command is issued.

25. The method of claim 24, wherein the first signal comprises one of a first plurality of values, one of the first plurality of values indicating an acknowledgment of correct decoding and no rate control command.

26. The method of claim 25, wherein the value indicating an acknowledgment of correct decoding and no rate control command revokes a prior grant.

27. The method of claim 24, wherein the first signal comprises one of a first plurality of values, one of the first plurality of values indicating an acknowledgment of correct decoding and a rate control command.

28. The method of claim 24, wherein the first signal comprises a value indicating no transmission corresponding to a negative acknowledgment of the decoded packet and no rate control command.

29. The method of claim 24, wherein the rate control command is one of a second plurality of values, wherein one or more of the second plurality of values indicates a rate increase.

30. The method of claim 24, wherein the rate control command is one of a second plurality of values, wherein one or more of the second plurality of values indicates a rate decrease.

31. The method of claim 24, wherein the rate control command is one of a second plurality of values, wherein one of the second plurality of values indicates a rate hold.

32. The method of claim 31, wherein the second signal comprises a value indicating no transmission for a rate hold.

33. The method of claim 24, further comprising:
receiving one or more transmission requests;
receiving one or more autonomous transmissions; and
allocating a shared resource in response to the one or more transmission requests and the one or more autonomous transmissions.

34. The method of claim 24, further comprising generating a grant in response to a received transmission request.

35. The method of claim 34, wherein the second signal is not generated when a grant is generated.

36. The method of claim 24, further comprising:
transmitting the first signal; and
conditionally transmitting the second signal when a rate control command is issued.

37. The method of claim 36, further comprising transmitting the grant when a grant is issued.

38. The method of claim 24, wherein the received packet is a subpacket.
39. The method of claim 39, wherein the decoding is performed in response to previously received corresponding subpackets, if any.
40. A method for rate control, comprising:
receiving a first signal comprising one of a first plurality of values, each value associated with an acknowledgment (ACK) or negative acknowledgment (NAK), and one or more of the values indicating a rate control command; and
conditionally receiving a second signal comprising one of a second plurality of values corresponding to a respective plurality of rate control commands when the value of the first received signal indicates a rate control command.
41. A method for rate control, comprising:
transmitting a packet;
receiving a first signal indicating whether the transmitted packet was acknowledged and whether a rate control command will be issued; and
receiving a second signal comprising the rate control command when a rate control command is issued.
42. The method of claim 41, wherein the first signal comprises one of a first plurality of values, one of the first plurality of values indicating an acknowledgment of correct decoding and no rate control command.
43. The method of claim 42, wherein the value indicating an acknowledgment of correct decoding and no rate control command revokes a prior grant.
44. The method of claim 41, wherein the first signal comprises one of a first plurality of values, one of the first plurality of values indicating an acknowledgment of correct decoding and a rate control command.

45. The method of claim 41, wherein the first signal comprises a value indicating no transmission corresponding to a negative acknowledgment of the decoded packet and no rate control command.

46. The method of claim 41, wherein the rate control command is one of a second plurality of values, wherein one or more of the second plurality of values indicates a rate increase.

47. The method of claim 41, wherein the rate control command is one of a second plurality of values, wherein one or more of the second plurality of values indicates a rate decrease.

48. The method of claim 41, wherein the rate control command is one of a second plurality of values, wherein one of the second plurality of values indicates a rate hold.

49. The method of claim 48, wherein the second signal comprises a value indicating no transmission for a rate hold.

50. The method of claim 41, further comprising:
retransmitting the packet when the first received signal indicates the transmitted packet was not acknowledged.

51. The method of claim 41, further comprising:
transmitting a second packet when the first received signal indicates the transmitted packet was acknowledged.

52. The method of claim 41, wherein the second packet is transmitted at a rate determined in accordance with the rate control command when a rate control command is received on the second signal.

53. The method of claim 41, wherein the transmitted packet is a subpacket.

54. An apparatus, comprising:

means for generating a first signal comprising one of a first plurality of values, each value associated with an acknowledgment (ACK) or negative acknowledgment (NAK), and one or more of the values indicating a rate control command; and

means for conditionally generating a second signal comprising one of a second plurality of values corresponding to a respective plurality of rate control commands when the value of the first signal indicates a rate control command.

55. A method for rate control, comprising:

means for receiving a packet;

means for decoding the packet;

means for generating a first signal indicating whether the received packet was decoded correctly and indicating whether a rate control command will be issued; and

means for generating a second signal comprising the rate control command when a rate control command is issued.

56. A method for rate control, comprising:

means for receiving a first signal comprising one of a first plurality of values, each value associated with an acknowledgment (ACK) or negative acknowledgment (NAK), and one or more of the values indicating a rate control command; and

means for conditionally receiving a second signal comprising one of a second plurality of values corresponding to a respective plurality of rate control commands when the value of the first received signal indicates a rate control command.

57. A method for rate control, comprising:

means for transmitting a packet;

means for receiving a first signal indicating whether the transmitted packet was acknowledged and whether a rate control command will be issued; and

means for receiving a second signal comprising the rate control command when a rate control command is issued.

58. A wireless communication system, comprising:

means for generating a first signal comprising one of a first plurality of values, each value associated with an acknowledgment (ACK) or negative acknowledgment (NAK), and one or more of the values indicating a rate control command; and

means for conditionally generating a second signal comprising one of a second plurality of values corresponding to a respective plurality of rate control commands when the value of the first signal indicates a rate control command.

59. A wireless communication system, comprising:

means for receiving a first signal comprising one of a first plurality of values, each value associated with an acknowledgment (ACK) or negative acknowledgment (NAK), and one or more of the values indicating a rate control command; and

means for conditionally receiving a second signal comprising one of a second plurality of values corresponding to a respective plurality of rate control commands when the value of the first received signal indicates a rate control command.

60. Computer readable media operable to perform the following steps:

generating a first signal comprising one of a first plurality of values, each value associated with an acknowledgment (ACK) or negative acknowledgment (NAK), and one or more of the values indicating a rate control command; and

conditionally generating a second signal comprising one of a second plurality of values corresponding to a respective plurality of rate control commands when the value of the first signal indicates a rate control command.

61. Computer readable media operable to perform the following steps:

receiving a packet;

decoding the packet;

generating a first signal indicating whether the received packet was decoded correctly and indicating whether a rate control command will be issued; and

generating a second signal comprising the rate control command when a rate control command is issued.

62. Computer readable media operable to perform the following steps:

receiving a first signal comprising one of a first plurality of values, each value associated with an acknowledgment (ACK) or negative acknowledgment (NAK), and one or more of the values indicating a rate control command; and

conditionally receiving a second signal comprising one of a second plurality of values corresponding to a respective plurality of rate control commands when the value of the first received signal indicates a rate control command.

63. Computer readable media operable to perform the following steps:

transmitting a packet;

receiving a first signal indicating whether the transmitted packet was acknowledged and whether a rate control command will be issued; and

receiving a second signal comprising the rate control command when a rate control command is issued.